Improving Defibrillator use in Pediatrics using Computer Simulation

Medical Motivation:
Provide physicians with a better understanding of the effects of Implantable Cardioverter Defibrillators (ICDs) on the patient through computer modelling.

Patient Specific Pipeline

Scan Patient → Segment Tissues
Place ICD and Electrodes → Build Mesh
Find Potentials Using FEM → Evaluate Electric Field Strength
Run Simulation
Use Results to Guide Placement

Model Validation

Recording ICD potentials on the body surface

Additional Applications

New Subcutaneous Implantations
Normal Two Lead Placement
Extra Subcutaneous Lead

Effects of Spinal Rods on Defibrillation
Without Spinal Rods
With Spinal Rods

Comparisons of measured and simulated ICD potentials